



MARSHALL STAR

Serving the Marshall Space Flight Center Community

Oct. 30, 2008

Marshall team celebrates NASA's golden milestone



David Higginbotham/MSC



To commemorate NASA's 50 years of putting new rockets and explorers into space, the Marshall Space Flight Center hosted an anniversary celebration Oct. 28. At left, Marshall celebrants enjoy lunch, live music and sweet treats in the courtyard of the Building 4200 complex. Above, Marshall retirees, from left, Jim Odom, Bob Schwinghamer and Luther Powell, joined by Herb Shivers, deputy director of Marshall's Safety and Mission Assurance Directorate, take part in a history panel discussion in Building 4200, Morris Auditorium. They discussed highlights from Apollo, NASA's first lunar program, and other programs and initiatives developed throughout NASA's history. The agency was founded Oct. 1, 1958.

Vital Marshall-developed hardware headed to space station

By Dauna Coulter

The International Space Station is about to get a little more crowded, but no one is complaining.

Space shuttle Endeavour is scheduled to fly two vital new pieces of equipment — the Water Recovery System and the EXPedite the PROcessing of Experiments, or EXPRESS, Rack 6 — to the station on the next shuttle mission, STS-126, targeted to launch Nov. 14. Marshall Space Flight Center teams played key roles in developing and managing both items.

The Water Recovery System is a water reclamation system that recycles crew urine and wastewater, and cabin humidity condensate. Through a series of rigorous treatment processes and filters, the

recovery system creates water clean enough to drink. Part of the same process has been used in humanitarian applications in Third World countries to produce drinkable water in remote areas.

The recovery system is the second part of NASA's Regenerative Environmental Control and Life Support System, a comprehensive life support system for the station. The first component, the Oxygen Generation System, was launched on shuttle Discovery in July 2007.

"For years, we've recognized the need for recycling water and oxygen to sustain life in space," said Bob Bagdigian, Regenerative Environmental Control and Life Support System project manager at

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Engine test marks end of era for Stennis Space Center

By Sanda Martel

The silence that followed the shake, rattle and roar at the Stennis Space Center near Bay St. Louis, Miss., Oct. 22 signaled more than the successful completion of space shuttle main engine flight certification testing. It marked the end of an era.

The 520-second test of space shuttle main engine 2061 was the final flight certification test for flight engines built for the nation's Space Shuttle Program. It is now one of 14 engines ready to fly before the shuttle's retirement in 2010.

Engine 2061 was shipped from the Kennedy Center to Stennis for testing in early October and will be returned to Kennedy Space Center, Fla., for installation on an orbiter now that the test has proven it flight worthy.

"This acceptance test marks a key milestone in the long history of the space shuttle main engine program," said Jerry Cook, manager of the Space Shuttle Main Engine Project at the Marshall Center. "While it is the last new production engine to be acceptance tested, we still have a lot of unfinished work ahead of us as we work toward completion of the International Space Station. We will continue to test space shuttle development engines on Test Stand A2 until 2010, as we deliver the last flight assets required to support the remaining 10 shuttle flights."

The project office is responsible for the requirements definition, design, development, manufacturing, assembly, testing and flight performance of the space shuttle main engines.

Since 1975, every space shuttle main engine, built for NASA by Pratt & Whitney Rocketdyne of Canoga Park, Calif., has been tested and certified at Stennis test stands — roughly 50 main engines for more than 120 space shuttle missions. Certified engines may be flown on more than a dozen flights before being tested for recertification. There has never been an engine malfunction that resulted in the loss of an engine or a shuttle mission.

Some observers at Stennis, including Don Beckmeyer, space shuttle main engine test project manager, viewed the Oct. 22 test with a sense of history.

"This is a milestone for NASA and Stennis," Beckmeyer said. "There is nothing like the space shuttle engine. It is probably one of the most complicated pieces of machinery ever built."

Larry Pigott, the Marshall Center's space shuttle main engine senior technical representative at Stennis, approached the final flight engine test with mixed emotions. "We're happy because it's



Fire and smoke billow from the A-2 test stand at the Stennis Space Center near Bay St. Louis, Miss., during a 520-second static test of a space shuttle main engine — the final test required to certify Engine 2061 for flight on the space shuttle.

such a great program and sad because it's coming to an end," said Pigott, who has been involved with the shuttle program since 1981. "This program is like family, and I've always been excited to be a part of it.

"This engine is such a good design, and we built redundancies into it to ensure safety, because we always take care of our astronauts," Pigott said. "That's why we test so much — to make sure everything works as it should. This work is much too important, and our astronauts are much too valuable, to make mistakes."

Developed in the 1970s by the Marshall Center, the space shuttle main engine is the most advanced liquid-fueled rocket engine ever built. Three main engines are mounted in the back of the orbiter and are ignited just before shuttle liftoff. Along with the solid rocket boosters, they provide the thrust to lift the orbiter off the ground for the initial shuttle ascent.

At one time, all three Stennis test stands were involved in shuttle engine testing. Today, testing for the program is limited to the A-2 Test Stand, while Stennis engineers prepare other stands to certify the J2-X engine now in development. That's the engine that will help power the Ares I rocket and Ares V heavy cargo launch vehicle that will take humans back to the moon.

Martel, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications. Her report is adapted from a story produced by the Stennis Space Center Public Affairs Office.

In celebration of NASA's 50th anniversary

Fifty years ago on Oct. 15, the first of a series of three X-15 experimental rocket-powered, manned research aircraft was rolled out at the Los Angeles plant of North American Aviation Inc., in the joint U.S. Air Force/U.S. Navy/NASA program.

Shuttle Endeavour moves to launch pad 39A

By Sandra Martel

Space shuttle Endeavour arrived Oct. 23 at Launch Pad 39A at NASA's Kennedy Space Center, Fla., where processing continues toward the targeted liftoff date of Nov. 14.

Endeavour's STS-126 mission to the International Space Station will feature important repair work and prepare the space station to house six crew members for long-duration missions.

The Space Shuttle Program Flight Readiness Review was completed Oct. 22, following an extensive two-day discussion of flight preparations. On Oct. 30-31, an agency-level review meeting to set the official launch date will be held at Kennedy. Program managers will recommend to senior NASA managers that space shuttle Endeavour is ready to support the STS-126 mission.

Marshall Center teams played key roles in developing and managing two vital new pieces of space station equipment that will be delivered and installed by the STS-126 astronauts — the Water Recovery System and the EXpedite the PROcessing of Experiments, or EXPRESS, Rack 6. The Water Recovery System is the second part of a comprehensive life support system that provides the station crew with clean drinking water through a series of chemical treatment processes. EXPRESS Rack 6 is the sixth in a series of standardized payload racks that transport, store and support experiments aboard the space station.

The 15-day STS-126 mission will feature four planned spacewalks focusing on servicing the space station's two Solar Alpha Rotary Joints, which allow solar arrays to track the sun.

Endeavour will carry about 32,000 pounds, including supplies

and equipment necessary to double the station's crew size from three to six members beginning in spring 2009. The new station cargo includes additional sleeping quarters, a second toilet and a resistance-based exercise device.

Joining STS-126 Commander Christopher Ferguson on the mission will be Pilot Eric A. Boe and mission specialists Sandra Magnus, Stephen Bowen, Donald Pettit, Shane Kimbrough and Heidemarie Stefanyshyn-Piper. Magnus will remain on the orbiting outpost, replacing Expedition 17/18 Flight Engineer Gregory E. Chamitoff, who returns to Earth with the STS-126 crew. Magnus will serve as a flight engineer and NASA science officer for Expedition 18 and return to Earth on shuttle mission STS-119 in early 2009.

Meanwhile, space shuttle Atlantis is back in the Kennedy Center's Vehicle Assembly Building, after being moved from Launch Pad 39A to make way for Endeavour. Atlantis was originally scheduled to launch this month on the STS-125 mission to service and repair the Hubble Space Telescope, but the mission was delayed after a telescope hardware malfunction occurred Sept. 27. The affected hardware controls the storage and transmittal of science data to Earth. The anomaly occurred during ground testing at the Kennedy Center. Efforts are under way to restore the telescope's science observations. A target launch date is under review.

For more information about the STS-126 mission, visit http://www.nasa.gov/mission_pages/shuttle/main/index.html.

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Doug Stoffer/MSFC

U.S. Department of Education's Juliette Rizzo encourages employment of people with disabilities

Juliette Rizzo, national director of exhibits and events planning for the U.S. Department of Education in Washington, spoke to a Marshall Space Flight Center audience Oct. 16 during the center's National Disability Employment Awareness Month program. Rizzo encouraged employment of people with disabilities and shared her own experiences as a special needs person in the work force. She said personal dreams and goals are well within reach for disabled workers when employers give them the opportunity. "I encourage everyone to embrace the abilities of people with disabilities, and give them the opportunities necessary to reach their full potential in the work place," Rizzo said. "We all have the chance to affect change in someone's life and help them be the best they can be." National Disability Employment Awareness Month is observed through the end of October.

Give today ... change tomorrow

CFC season going strong with help of Marshall team

Marshall Space Flight Center team members cheered at the center's Combined Federal Campaign rally, helped children with special needs during Community Service Days and enjoyed the flowers at the Huntsville Botanical Garden bus tour — all in support of this year's campaign. The CFC is an annual initiative by federal

and military personnel to raise money for charities. The Marshall Center has set a goal of \$600,000 for its campaign this year, which began Oct. 6 and runs through Dec. 12. To participate in CFC activities or to make a donation, please visit <http://cfc.msfc.nasa.gov/>.

The Marshall Center held its Combined Federal Campaign rally Oct. 23. At right, Marshall team members get pumped up at the rally. Below left, cheerleaders from Madison County High School at Gurley lead the Marshall team in CFC-inspired cheers. Below right Huntsville's Lee High School marching band fills Morris Auditorium with horns-a-plenty.



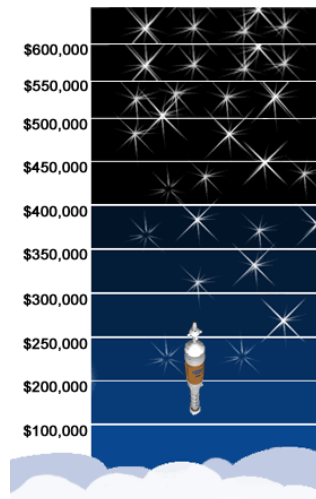
Emmett Given/MSFC



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Emmett Given/MSFC

CFC Executive Chairperson Pat Benson welcomes Marshall team members to the rally, thanking them for their contributions. As of Oct. 27, the center has donated \$263,162 toward its \$600,000 goal.



Emmett Given/MSFC

Marshall Center Deputy Director Robert Lightfoot, left, presents Lindsey Jones a Space Camp Barbie Doll in appreciation for speaking at this year's CFC rally. Lindsey, 12-year-old daughter of Terry Jones, a Marshall management support assistant in the Engineering Directorate's Solid Propulsion Systems Division, was diagnosed with a rare form of cancer a month before her fourth birthday. After receiving chemotherapy for a year and six months of radiation, Lindsey has been in complete remission for seven years. She shared with employees how CFC donations helped her through her illness. She has been a beneficiary of CFC agencies, including the Make-A-Wish Foundation and Give Kids the World, which grant wishes to children with life-threatening medical conditions.



Emmett Given/MSFC

The CFC rally's keynote speaker Violet Parker Edwards, chief executive officer of Christmas Charities Year Round, shares how the campaign has helped the non-profit organization through donations. Christmas Charities provides food, clothes, toys and toiletries to those in need in Madison County.

Want to see how your CFC dollars are being put to good use? Take a bus tour spotlighting charitable organizations participating in CFC. Above right, Marshall team members tour the Huntsville Botanical Garden. At lower right, Marshall team members are briefed about the work of the Huntsville-Madison County Rescue Squad. Tours end Nov. 20. To sign up, please visit <http://cfc.msfc.nasa.gov/CF/bus.cfm>.



Doug Stoffer/MSFC



Doug Stoffer/MSFC



Doug Stoffer/MSFC

Marshall team members assisted with track and field events Oct. 14 during the Special Olympics at Milton Frank Stadium in Huntsville. The event, part of CFC's Community Service Days, encourages individuals with intellectual disabilities to become physically fit. The service days, which go through Nov. 26, enable participating employees to donate their time and skills by helping at local organizations during regular work hours.

Ares I rocket explained in a 'canny' way

Don Krupp, right, stage analysis branch chief in Marshall's Engineering Directorate, explains the different parts and functions of the Ares I rocket using a "can rocket" — a model constructed of cans of soup, tuna and other foods, each representing components of the launch vehicle. Krupp's attentive visitors — students from the Tennessee School for the Blind in Nashville — include, from left, Jonathan Johnson, Morgan Burns, Hannah Willis and Garrett Jones. A total of 21 students from the school visited the Marshall Space Flight Center on Oct. 21 to attend a presentation on the space shuttle and NASA's next-generation spaceflight programs and to tour center facilities. The annual trip is part of Marshall's commemoration of National Disability Employment Awareness Month, which runs through the end of October.



Emmett Given/MSFC

Hardware

Continued from page 1

Marshall. "Soon our hard work toward that goal will be realized."

Recycling reduces the crew's dependence on Earth resupply. It can reduce the need for outside water and consumables by about 15,000 pounds a year.

The second payload, EXPRESS Rack 6, is the sixth in a series of racks already supporting scientific experiments on the space station. EXPRESS Rack 6 and its predecessors perform a critical function. They transport, store and support the multidisciplinary science experiments performed in the near zero-gravity conditions of the space station's orbital lab. With their standardized hardware interfaces, the EXPRESS racks enable easy, efficient experiment integration, providing power, data, command and control, video, water cooling, air cooling, vacuum exhaust and nitrogen supply.

The racks remain in orbit aboard the space station, and experiments are transferred in and out of them as dictated by science priorities, resource constraints and experiment run-time requirements. Each rack allows its payloads to operate independently of one another, even if the experiments require different temperatures, power levels and schedules. Through these experiments, scientists are developing lighter metals, more powerful computer chips and learning about plant growth in microgravity.

In addition to payload hardware, EXPRESS Rack 6 will accommodate crew galley hardware — a freezer, a potable water dispenser and food warmers — in support of the station's expanded, six-person crew capability.

"The racks are good, flexible pieces of hardware that accommodate many different applications," said Annette Sledd, manager of the International Space Station Payloads Office at Marshall. "The existing

five EXPRESS racks on-orbit have a proven track record — they've supported approximately 68 payloads to date on the space station for a total combined run time of more than 120,000 hours. The use of EXPRESS Rack 6 in support of the crew galley hardware demonstrates the racks' versatility, which has contributed greatly to their success."

The two new pieces of equipment are undergoing final flight preparations at NASA's Kennedy Space Center, Fla. For transport to the space station, the EXPRESS rack and Water Recovery System will be loaded into one of the three Marshall-managed Multi-Purpose Logistics Modules — pressurized cargo carriers that serve as the space station's "moving vans," transporting equipment, experiments and supplies to and from the station aboard the space shuttle. The modules were built by the Italian Space Agency.

Upon arrival at the station, EXPRESS Rack 6 and the Water Recovery System will be moved into the U.S. Destiny laboratory module. The Water Recovery System later will be moved to Node 3, which eventually will house the life support equipment necessary for the permanent crew of six.

EXPRESS Rack 3 is maintained in the European Space Agency's Columbus laboratory module, and EXPRESS Racks 4 and 5 are housed in the Japanese Kibo laboratory module.

Marshall manages the EXPRESS rack system, built by the Boeing Co. in Huntsville. Marshall's current roles include EXPRESS rack integration, flight readiness, sustaining engineering, logistics and maintenance. Space station program management is at NASA's Johnson Space Center in Houston.

Engineers at Marshall and at Hamilton Sundstrand Space Systems International Inc. in Windsor Locks, Conn., led the design and development of the Water Recovery System.

Coulter, a Schafer Corp. employee, supports the Office of Strategic Analysis & Communications.

Ares team highlights Von Braun Symposium



Doug Stoffer/MSFC

Participants in the Wernher von Braun Memorial Symposium, held Oct. 21-22 at the Von Braun Center in Huntsville, include, from left, Fred Brasfield, Ares I first stage program manager for ATK Launch Systems; Jim Reuter, Ares Projects vehicle integration manager at the Marshall Space Flight Center; Jim Taylor, Ares Projects flight and integrated test manager at Marshall; Walt Janowski, J-2X vice president and program manager for Pratt & Whitney Rocketdyne; Steve Cook, Ares Projects manager at Marshall; Danny Davis, Ares Projects upper stage manager at Marshall; and Dwight Potter, Ares I instrument unit avionics program manager for The Boeing Company. Symposium panel discussions on the Ares I rocket and the Ares V heavy cargo launch vehicle, led by the Ares Projects team and its industry partners, provided detailed updates on development of NASA's next-generation launch fleet. The American Astronautical Society and the National Space Club of Huntsville hosted the symposium in conjunction with the Marshall Center, The Boeing Company, Pratt & Whitney Rocketdyne, ATK Launch Systems, Teledyne Brown Engineering and Lockheed Martin, all of Huntsville.

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Marshall Star Ad Form." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue, Nov. 6, is 4:30 p.m. Thursday, Oct. 30.

Miscellaneous

Kenmore washer/dryer, \$400; king-sized mattress, box springs, \$500 obo. 535-6188 or 256-508-0825
Wall tapestry, 5'x8', rod, tassels, \$295. 464-7262
Entertainment center, 57"L x 48"H x 18"D, 25"x31" TV opening, rollers, glass doors, shelves, \$150. 882-0461
Paradigm Reference Studio surround ADP-450 speakers, left, right, center set, \$550 obo. 843-513-7939
Six oak dining chairs, new rush seats, \$420. 586-2852
AKC German Shepherd puppies, born May 7, black/tan, vet checked, \$350. 694-5912 or 828-3373
Five guitar effect pedals, \$20 each; PA head, \$20. 205-394-1307
AKC Jack Russell Terrier puppies, Sire is from UKG import blood line. 572-1998
Mirage speakers, two OM-7 towers, two Omnisat satellite speakers, stands, \$1,500. 679-2165
Springfield Armory Loaded M1A, 3rd Generation 4x14

Scope, 10 20RD Magazines, \$2,500 obo. 509-2524
Tetris world game, for PlayStation console, unopened, \$20. 498-2028
Smith professional weight set, extra bar, \$400. 722-2157
IBM Aptiva 166MHz PC, CD, monitor; \$100 obo; 486/66 PC, CD, monitor, \$50 obo. 828-5326
Daniel Moore print, "The Tradition Continues," 1063/19920, signed by Gene Stallings, \$350. 883-8257
McLane reel mower, 20-inch, B&S engine, striping kit, \$400 obo. 679-8041
House cleaning gift certificates, prices vary. 777-8595
Pitching machine, \$1,250. 464-9408
Maytag washer, super capacity, \$50 obo. 665-8899
2006 John Deere riding mower, model 190C, 54-inch cutting deck, less than 30 hours, \$2,500. 337-7243
Yamaha Electone organ, bench, books, hookups for headphones/microphone, \$500. 653-9979
Garbage compactor, residential, brown, \$300 obo. 852-5595
Titleist "Scotty Cameron" Newport 2 putter, \$275. 881-1249
Kegator fridge/freezer, \$250; table, two leafs, full-cover pads, six chairs, matching hutch, \$500. 585-4100
Smith and Wesson .38 Special, K frame, 4-inch barrel, \$300 obo. bobdl@yahoo.com

Vehicles

2008 Nissan Maxima, 12k miles, \$23,500 obo; 1999 Mercury Mystique, 83k miles, \$2,650 obo. 520-2802
2008 Nissan Titan SE, 4WD, four door, power, green, 3,600 miles, will take payoff. 931-937-7094
2007 Honda TRX450R Sport ATV/quad, electric start, plastics, black/flammes, frame/red, \$4,950. 345-9555
2006 Trail Cruiser TT, 28 feet, sleeps eight, Sway kit, \$11,900. 502-9300

2006 BMW 325i, white/tan, loaded, 39k miles, \$22,900. 883-6894 or 468-6894
2003 Mitsubishi Eclipse GS, silver, five-speed manual, 30 mpg, 90k miles, \$6,000. 931-6954
2003 Gas Club Car Golf Cart, beige, tan seats, windshield, \$2,375 obo. 682-6326
2002 Fleetwood Expedition motor home, 300HP Cummins diesel, Allison transmission, take up payments. 431-9898
2001 Chevy Silverado 2500HD-SL, extended cab, 133k miles, \$6,500. 931-703-6935
2000 Ford Windstar SEL, white, loaded, leather, 144k miles, \$4,900 obo. 881-8640
1997 BMW 528i, premium package, leather, moonroof, premium sound, 25.8 mpg, 229k miles, \$6,200. 865-384-4616
1996 Jeep Cherokee, 2WD, 230k miles, \$1,900 obo. 348-0391
1989 Mercedes 300TE wagon, third seat, records, 23/19 mpg, \$3,000. 520-5014
1964 Ford Mustang 260, V8, auto, A/C, flow masters, red, \$8,000. 577-4002

Wanted

Electrical work to do, wiring houses, adding/removing switches, plugs, lights, circuits. 468-8906
Category 1 4-5-foot box blade, middle buster. 665-8899
Left-handed golf clubs. 961-1048

Found

Car jack handle, Building 4200 north parking lot. 651-2944
Woman's black Chico's sweater, turned in at Building 4200 security lobby desk, Oct. 21. 544-4680

Marshall's Victoria Garcia: 'Disability does not determine how I live'

By Megan Norris Davidson

Victoria Garcia's parents knew something was wrong when she didn't respond to loud noises. Hearing tests confirmed their then-18-month-old was profoundly deaf.

Today, the 25-year-old aerospace engineer at the Marshall Space Flight Center says she never let that challenge stop her from achieving anything she wanted — including working toward helping to put a new era of rockets into space.

Born and raised in Miami, Garcia began wearing hearing aids soon after those tests as a toddler. Her parents quickly enrolled her in speech therapy classes.

"After it was determined by my speech therapist that I had the necessary skills to progress along with my hearing peers in a classroom environment, my parents mainstreamed me into private school in order to make use of the smaller classes," she recalled. "I didn't have to have any special accommodations throughout my education, since I could read my teachers' lips. I did have to remind them sometimes to face the kids and not the blackboard when they spoke." To make up for anything she may have missed in the classroom, textbooks filled the gaps.

Garcia excelled in school, earning a University of Miami Book Award in 2000, awarded to U.S. high school juniors who exhibit outstanding leadership and academic excellence. She continued her education at Rensselaer Polytechnic Institute in Troy, N.Y., where she made the Dean's List and earned a bachelor's degree in mechanical engineering in 2005. After graduating, she interned at NASA's Kennedy Space Center, Fla., where she was task lead on various projects, including the

installation of filters for water and ammonia for the International Space Station — the orbiting laboratory NASA and space agencies from 15 other nations continue to build in space.

Garcia joined NASA in 2008 after earning a master's degree in mechanical engineering from the Georgia Institute of Technology in Atlanta. Today, she develops analytical tools and methods for the Ares I upper stage, a component of the Ares I rocket and part of the Constellation Program to take human explorers to the moon, and then onward to Mars and other destinations in the solar system.

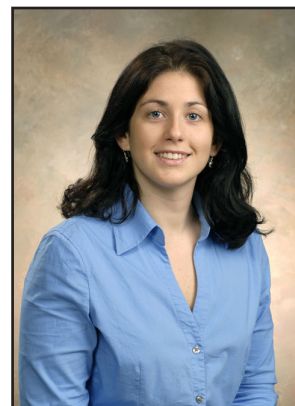
"Exploring possibilities in space is an exciting area to work in," Garcia said. "I am eager to be a part of something that expands our knowledge of the universe."

Her deafness does pose a few challenges in the work place, she said, but quickly adds it doesn't keep her from getting the job done. "I don't feel being deaf hinders my core job duties at all. However, while I do fine in small groups, I have difficulty keeping track of who's speaking in a large group of people since I rely on reading lips. Also, I can't communicate on a regular phone."

To help accommodate her, the Marshall Center supplies Garcia with a Telecommunications Device for the Deaf, a telephone equipped with a keyboard and display that allows individuals to send and receive typed messages using the keyboard.

"Of course I have limitations, but there are always ways around them," Garcia added. "Being deaf is part of who I am, but it doesn't determine how I live."

Davidson, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.



Victoria Garcia

MARSHALL STAR

Vol. 49/No. 8

Marshall Space Flight Center, Alabama 35812
(256) 544-0030
<http://www.nasa.gov/centers/marshall>

The Marshall Star is published every Thursday by the Public and Employee Communications Office at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. Classified ads must be submitted by 4:30 p.m. Thursday, and other submissions no later than 5 p.m. Friday to the Marshall Public and Employee Communications Office (CS20), Building 4200, Room 102. Submissions should be written legibly and include the originator's name. Send e-mail submissions to: intercom@msfc.nasa.gov. The Star does not publish commercial advertising of any kind.

Manager of Public and Employee
Communications — Dom Amatore
Editor — Jessica Wallace



U.S. Government Printing Office 2009-523-047-20173

PRSR STD
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PERMIT NO. 298